

REMARKS

Claims 1-4 are pending in this application. Reconsideration of this application in view of the following remarks is respectfully requested.

The Office Action rejects claim 1 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,402,530 to Saito et al. ("Saito") in view of U.S. Patent No. 4,739,441 to Galletly ("Galletly") and further in view of U.S. Patent No. 5,954,533 to Hatagishi et al. ("Hatagishi"). Further, the Office Action rejects claim 2 under 35 U.S.C. §103(a) as unpatentable over Saito, in view of Galletly and further in view of U.S. Patent No. 5,205,757 to Hertelendy et al. ("Hertelendy"). These rejections are respectfully traversed.

I. It Would Not Have Been Obvious to Make Welded Connections Between Different Metals

Independent claims 1 and 2 each recite, *inter alia*, "[a] connection structure between bus bars and relay terminals . . . wherein at least one of said relay terminals is made of a conductive material different from that of the bus bar." Support for these features may be found throughout the original specification. For example, specific support may be found in the original specification at least at paragraph [0026] and at paragraph [0029]. Applicants respectfully submit that the Saito/Galletly/Hatagishi and Saito/Galletly/Hertelendy combinations do not disclose, teach or suggest such features. Accordingly, it is respectfully submitted that claims 1 and 2 are patentably distinguishable over the applied art.

The Office Action states with respect to claim 1 at page 3, line 12-20, and with respect to claim 2 at page 5, lines 10-18, that "it would have been an obvious matter of design preference to make the bus bar and the terminals from different materials, since applicant has not disclosed that such arrangement solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the bus bar and terminal of Saito, as modified." Applicants disagree.

The present invention teaches using aluminum-based bus bars in order to reduce the amount of copper present in a recycled automobile in order to bring the "required mixing rate of copper to iron [to] less than 0.1%." As addressed at paragraph [0008], if conventional copper-based bus bars are used in automobiles, "the electrical connection box must be disassembled in order to take out the bus bars from the box. This work requires extensive manpower and is not practical."

However, it is explained, at least at paragraph [0014], that if an aluminum-based bus bar is used to form electrical connections with "connection parts are made of different kinds of metal" electric erosion (i.e., corrosive galvanic activity) may occur if the connection is exposed to water.

Thus, exemplary embodiments of the present invention solve three unique problems: 1) a problem present in the recycling of automobiles that is resolved through the use of an aluminum bus; 2) a need for a reliable connection structure for use with the aluminum bus; and 3) a problem with the use of the aluminum bus to support connection with copper-based terminals.

Problem 1, identified above, is addressed by the claimed invention through the use of an aluminum-based bus. As stated at paragraph [0012], "since the bus bars, made of aluminum-based metal, are provided in lieu of conventional bus bars made of copper-based metal, it is possible to reduce copper to iron mixing rate which influences the iron-recovery during recycling of car bodies and enhances recyclability of junked automobile[s]."

Problem 2 is addressed by the claimed invention, as stated at paragraph [0010], by "provid[ing] a connection structure between bus bars and relay terminals that enhances automobile recyclability, electrical connection reliability and prevents electric erosion." As stated at paragraph [0011], "[i]n order to achieve the above objects, the present invention provides a connection structure between bus bars and relay terminals. . . [e]ach bus bar is

welded to each relay terminal . . ." (emphasis added). In addition, paragraphs [0025]-[0026] and Fig. 1-2 provide an exemplary embodiment of the claimed "connection structure between bus bars and relay terminals that enhances automobile recyclability, electrical connection reliability and prevents electric erosion" in which, as described at paragraph [0026] the "relay terminals T [are] made of brass having a copper-based metal" and "[e]ach bus bar 10 is welded to each relay terminal T."

The claimed invention resolves the problem 3, identified above, by one of embedding "welded connection parts between said bus bars and said relay terminals . . . in a molded insulation resin," as recited in claim 1, and/or or applying "grease . . . to and surround[ing] the welded connection parts between each said bus bars and said relay terminals," as recited in claim 2. Support for these feature may be found in the original specification at least at paragraphs [0014], [0016], and [0031].

As recognized in the Office Action at page 3, lines 12-13, and at page 5, lines 10-11, Saito, as modified, (i.e., the Saito/Galletly/Hatagishi and/or Hertelendy combination fail to teach "wherein at least one of said relay terminals is made of a conductive material different from that of the bus bar," as recited in the claims. However, the Office Action dismisses this feature as irrelevant, stating that, "it would have been an obvious matter of design preference to make the bus bar and the terminals from different materials." Applicants disagree. One of ordinary skill of the art would have known that galvanic action occurs in the presence of moisture if metals of different types are brought into contact. Therefore, one of ordinary skill in the art at the time the invention was made would have avoided forming connections between aluminum-based bus bars and copper-based terminals, as recited in the claims. Significantly, none of the applied references discloses the concept of forming a connection between a copper component and an aluminum component. The absence of such a teaching

in these references is to be expected, because the normal practice in the art is to make connected metal parts out of the same metal in order to avoid galvanic action.

Therefore, Applicants respectfully submit that the Saito/Galletly/Hatagishi and Saito/Galletly/Hertelendy combinations do not disclose, teach or suggest "[a] connection structure between bus bars and relay terminals . . . wherein at least one of said relay terminals is made of a conductive material different from that of the bus bar," and that for at least the above reasons, such a connection structure would not have been obvious to one of ordinary skill in the art at the time the invention was made.

II. Even If Combined In The Manner Suggested, The Applied Prior Art Does Not Disclose a Copper-Based Relay Terminal Welded To an Aluminum-Based Metal Plate

The Office Action relies on col. 5, lines 52-60 of Saito for a teaching of "each bus bar being welded to each respective relay terminal." However, this passage discloses that the bus bar (element 16) is welded to relay connection bus bars. This is not the same as being welded to the relay terminals themselves. It may be the same as being connected to the relay terminals, because the bus bar is connected to the relay terminals via the relay connection bus bars, but the fact that two components are connected via a third component by welding does not mean that the two components are welded to each other. (As an analogy, if person A is holding hands with persons B and C, persons B and C are not necessarily holding hands with each other.) Therefore, the Office Action's assertion that Saito discloses the feature of "each bus bar being welded to each respective relay terminal" is incorrect.

* * *

For at least these reasons, it is respectfully submitted that claims 1 and 2 are patentably distinguishable over the applied art. Claims 3 and 4 depend from independent claims 1 and 2, respectively, and are likewise patentably distinguishable over the applied art

for at least their dependence on an allowable base claim, as well as for additional features they recite. Accordingly, withdrawal of this rejection is respectfully requested.

III. Conclusion

Accordingly, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-4 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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